

JAGATHPALA SHETTY, PHD**CURRICULUM VITAE****Work Address:**

Research Assistant Professor,
Department of Cell Biology,
2-27 Jordan Hall, 1300 JPA,
University of Virginia, Charlottesville, VA-22908
Telephone: 434-924-2082
Fax: 434-982-3912
E-mail: js4ed@virginia.edu

Home Address:

422 Farrish Circle, Apt.B27,
Charlottesville, VA-22908
434-923-8479.

Nationality: Indian
Marital status: Married

Education

<i>Degree</i>	<i>University</i>	<i>Year</i>	<i>Result/grade</i>
Ph.D (Zoology) Area of study: Mammalian reproductive biology	Univ. of Mysore, India	1991	
Master of Science In Zoology, Spl sub:Reproductive Biology	Univ. of Mysore, India	1980	I class
Bachelor of Science	Univ. of Mysore, India	1978	I class

Research Experience

Research Scientist: University of Virginia, Department of Cell Biology, Center for Research in Contraceptive and Reproductive Health. supervisor, John C. Herr, Ph.D. July 2003-present.

Research Associate: University of Virginia, Department of Cell Biology Center for Research in Contraceptive and Reproductive Health, supervisor, John C. Herr, Ph.D. July 1999-2003.

Fogarty Post doctoral Fellow: University of Virginia, Department of Cell Biology, Center for Research in Contraceptive and Reproductive Health, supervisor, John C. Herr, Ph.D. Dec. 1996-July 1999.

Research Associate: Indian Institute of Science, Bangalore, India, Center for Reproductive and Molecular Endocrinology, Supervisor: Rajan R. Dighe, Ph.D. 1992-Nov. 1996

Doctoral Thesis: Study on Some Aspects of the Reproductive Biology of Male mongoose, *Herpestes edwardsii edwardsii* Geoffroy. Advisor: S.R.Kanakaraj, Ph.D., University of Mysore, India. 1981-1990.

Research Grants:

Submitted a RO1 grant application entitled: "The role of SAMP14 in acrosome biogenesis and fertilization" to NIH on oct. 2, 2005.

Teaching Experience:

Worked as lecturer in the Dept. of studies in Zoology, Univ. of Mysore, during the periods Sept. 89 to March '90 and Sept. '90 to March '91.

Fellowships/ Awards

1. National Merit Scholarship during the year 1979-80.
2. Junior Research Fellowship by Council of Scientific and Industrial Research, Govt. of India in 1981.
3. Senior Research Fellowship by Council of Scientific and Industrial Research, Govt. of India, 1983.
4. Research Associateship by the Council of Scientific and Industrial Research, Govt. of India in 1991.
5. DBT (Govt. of India) Research Associateship in Feb. 1992
6. Fogarty International Post Doctoral Fellowship (USA), in Oct. 1996.
7. SMRU (Society for Male Reproduction and Urology) Traveling Scholars Award (USA), July 2003

Invited lectures:

Sperm Proteomics: Mining Novel Alloantigens of the acrosome and flagella. American Society for Reproductive Immunology, 24th Annual meeting, St. Louis, Missouri.

Summary of Ongoing Project:

The main goal of the investigations is to identify and characterize novel human sperm molecules which may be involved in fertilization and which may be **potential immunocontraceptive vaccine candidates or drugable targets**. One of the rationales in this venture was to identify novel sperm surface molecules and sperm acrosome membrane proteins which may participate in the process of fertilization. An additional consideration was to identify human sperm proteins that are immunogenic, and which may cause infertility due to the formation of auto- or iso-antibodies. The methodologies used were surface labeling of sperm using radioactive iodine or biotin, differential extraction of proteins to enrich membrane associated proteins, and high resolution 2-D gel electrophoresis followed by mass spectrometry. To identify sperm proteins that may be involved in infertility, sera from infertile male and female patients (who are otherwise normal) containing antisperm antibodies were screened by 2-D gel electrophoresis and immunoblotting. Several sperm proteins which may be involved in antibody mediated infertility were identified by this method (**Shetty et al., Biology of Reprod. 61, 61-69, 1999**).

A differential extraction by utilizing TX-114 phase partitioning combined with surface labeling yielded several novel sperm proteins by proteome analysis (2-D gel electrophoresis and mass spectrometry). (**Shetty et al., Electrophoresis 22, 3053-3066, 2001**). The cDNA for two of the novel proteins identified by the above methods were cloned and are being characterized. One of them is a sperm acrosome membrane associated protein (SAMP14) that is attached to the membrane through a GPI anchor. Preliminary studies have shown that the protein may be involved in fertilization. The studies on this protein has been **published in JBC**. Another protein named meichroacidin, localized to the axonemal complex of the sperm tail appears to be a molecule involved in the sperm motility. I am also involved in collaborative projects with several other workers in the group dealing with both sperm and oocyte proteomics.

Future goal of the project: I am currently working on SAMP14, one of the sperm acrosomal protein and my future goal is to completely understand its functional significance in sperm acrosomal development, acrosome reaction and fertilization. I am currently in the process of identifying the potential binding partner proteins for SAMP14. Functional analysis of SAMP14 by deleting SAMP14 gene in mouse model by 'knock out technology' is also in progress.

LIST OF PUBLICATIONS

I. Papers in refereed Journals

1. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1984). Gravimetric and histological study of the adrenal glands of the Indian gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. **Current Science**, 53:412-415.
2. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1990). Vocal activity of the Indian gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. **Journal of Bombay Natural History Society**, 87:47-49.
3. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1995). Mating behaviour of Indian gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. **Journal of Bombay Natural History Society**, India.92:26-29.
4. Gopal Marathe, K., **Jagathpala Shetty** and Rajan R. Dighe (1995). Selective immunoneutralization of Luteinizing Hormone results in the apoptotic cell death of pachytene spermatocytes and spermatids in the rat testis. **Endocrine**, 3: 705-709.
5. **Jagathpala Shetty**, Gopal K. Marathe and Rajan R. Dighe (1996). Pituitary gonadotropins regulate spermatogonial proliferation in the rat. **J. of Biosciences**, 21:81-92.
6. **Jagathpala Shetty**, Gopal K. Marathe and Rajan R. Dighe (1996). Specific immunoneutralization of FSH leads to apoptotic cell death of the pachytene spermatocytes and spermatogonial cells in the rat. **Endocrinology**, 137:2179-2182.
7. **Jagathpala Shetty**, Soren Naaby-Hansen, Hiroaki Shibahara, Richard Bronson, Charles J. Flickinger and John C. Herr (1999). Sperm proteome: Sperm surface antigens identified with sera from infertile men and women. **Biology of Reproduction**, 61:61-69.
8. Mandal A, Naaby-Hansen S, Wolkowicz MJ, Koltz K, **Shetty J**, Retief JD, Conrod SA, Kinter M, Sherman N, Cesar F, Flickinger CJ, and Herr JC (1999). FSP95, a testis-specific 95-kilodalton fibrous sheath antigen that undergoes tyrosine phosphorylation in capacitated human spermatozoa. **Biology of Reproduction**, 61:1184-1197.
9. Scott A.Coonrod, Soren Naaby-Hansen, **Jagathpala Shetty**, Hiroaki Shibahara, Michellee Chen, Judith M.White and John C.Herr (1999). Treatment of mouse oocytes with PI-PLC releases 17kDa (pI 5) and 35-45 kDa (pI 5.5) protein clusters from the egg surface and inhibits sperm oolemma binding and fusion. **Developmental Biology**, 207:334-349.
10. Coonrod S, Naaby-Hansen S, **Shetty J**, Herr J (1999). PI-PLC releases a 25-40 kDa protein cluster from the hamster oolemma and affects the sperm penetration assay. **Molecular Human Reproduction**, 5:1027-1033.

11. **Shetty J.**, Diekman AB, Jayes FC, Sherman, NE, Naaby Hansen S, Flickinger CJ and Herr JC (2001). Differential extraction and enrichment of human sperm surface proteins in a proteome: identification of immunocontraceptive candidates. **Electrophoresis**, 22:3053-3066.
12. Naaby-Hansen S, Wolkowicz MJ, Klotz K, Bush LA, Westbrook VA, Shibahara H, **Shetty J**, Coonrod SA, Reddi PP, Shannon J, Kinter M, Sherman NE, Fox J, Flickinger CJ, Herr JC (2001). Co-localization of the inositol 1,4,5-trisphosphate receptor and calreticulin in the equatorial segment and in membrane bounded vesicles in the cytoplasmic droplet of human spermatozoa. **Molecular Human Reproduction**, 7:923-933.
13. Naaby-Hansen S, Mandal A, Wolkowicz MJ, Sen B, Westbrook VA, **Shetty J**, Coonrod SA, Klotz KL, Kim YH, Bush LA, Flickinger CJ, Herr JC (2002). CABYR, a novel calcium-binding tyrosine phosphorylation-regulated fibrous sheath protein involved in capacitation. **Developmental Biology**, 242:236-254.
14. Hao ZL, Wolkowicz MJ, **Shetty J**, Klotz K, Bolling L, Sen B, Westbrook VA, Coonrod S, Flickinger CJ, Herr, JC (2002). SAMP32, a testis-specific, isoantigenic sperm acrosomal membrane-associated protein. **Biology of Reproduction**, 66:735-744.
15. Shibahara H, Sato I, **Shetty J**, Naaby-Hansen S, Herr JC, Wakimoto E, Koyama K (2002). Two-dimensional electrophoretic analysis of sperm antigens recognized by sperm immobilizing antibodies detected in infertile women. **Journal of Reproductive Immunology**, 53:1-12.
16. Arabinda Mandal, Kenneth L. Klotz, **Jagathpala Shetty**, Friederike L. Jayes, Michael J Wolkowicz, Laura C. Bolling, Scott A. Coonrod, Michael B. Black, Alan B. Diekman, Timothy A.J. Haystead, Charles J. Flickinger, and John C. Herr (2003). SLLP1, A Unique, Intra-Acrosomal, Non-Bacteriolytic, C Lysozyme-Like Protein of Human Spermatozoa. **Biology of Reproduction**, 68: 1525-1537.
17. Paul W. Wright, Laura C. Bolling, Meredith E. Calvert, Olga F. Sarmiento, Elizabeth V. Berkeley, Margaret C. Shea, Zhonglin Hao, Friederike C. Jayes, Leigh Ann Bush, **Jagathpala Shetty**, Amy N. Shore, Prabhakara P. Reddi, Kenneth S. Tung, Eileen Samy, Margaretta M. Allietta, Nicholas E. Sherman, John C. Herr and Scott A. Coonrod (2003). ePAD, an oocyte and early embryo-abundant peptidylargininedeiminase-like protein that localizes to egg cytoplasmic sheets. **Developmental Biology**, 256:74-89.
18. B.Sen, A.Mandal, M.Wolkowicz, YH Kim, P.Reddi, **J.Shetty**, LA Bush, C.Flickinger, J. Herr (2003). Splicing in murine CABYR and its genomic structure. **Gene**, Accepted for publication.
19. **Jagathpala Shetty**, Michael J. Wolkowicz, Kenneth Klotz, Friederike L. Jayes, Alan Diekman, Laura Bolling, V. Anne Westbrook, Erin M. Farris, Scott Coonrod, Charles J. Flickinger and John C. Herr (2003). SAMP14, a Novel, Acrosomal Membrane Associated, GPI anchored Member of the Ly-6/UPAR Receptor Superfamily with a Role in Sperm-Egg Interaction., **Journal of Biological Chemistry**, Vol. 278, Issue 33, 30506-30515.
20. Michael J. Wolkowicz, **Jagathpala Shetty**, Anne Westbrook, Ken Klotz, Frederike Jayes, Arabinda Mandal, Charles J. Flickinger and John C. Herr (2003). Equatorial Segment Protein (ESP) Defines a Discrete Acrosomal Sub-compartment Persisting Throughout Acrosomal Biogenesis. Accepted for publication, **Biology of Reproduction**, 69(3):735-45.

Manuscripts under preparation:

1. **Jagathpala Shetty**, Michael J. Wolkowicz, Kenneth L. Klotz and John C. Herr. Meichroacidin, a novel morn repeat family member localizes within the axoneme of human sperm and is a human alloantigen, in prep
2. **Jagathpala Shetty**, Mitali Samaddar, Shilpa Gandre, S.C.Sharma, James F. Catterall and Rajan R. Dighe. Some biological and immunological characterization of recombinant rat FSH receptor fragment, in prep.
3. Hiroaki Shibahara, Soren Naaby-Hansen, **Jagathpala Shetty**, Scott A.Coonrod, Charles J.Flickinger and John C. Herr. Identification of Glycosylphosphatidylinositol (GPI)- anchored Human Sperm Membrane proteins, in prep.

Papers presented in Scientific meetings

1. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1982). Histochemical localization of some steroidogenic and metabolic enzymes in the adrenal gland of mongoose, *Herpestes edwardsii edwardsii* Geoffroy. 51st Annual meeting of Society of Biological Chemists, Chandigarh.
2. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1982) Some aspects of behaviour of the Indian gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. All India Symposium on Wild Life Biology, Farook College, Calicut, Dec. 27-29.
3. Gunapala Shetty, **Jagathpala Shetty** and S.R.Kanakaraj (1983). Adrenal gland of Indian gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. 70th session of Indian Sci. Congress Association, Tirupati.
4. Gunapala Shetty, **Jagathpala Shetty** and S.R.Kanakaraj (1985). The ovary of the Indian gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. Fifth Annual Symposium on Reproductive Biology and Comp. Endocrinology, Pondicherry.
5. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1986). Observation on the mating behaviour of the gray mongoose, *Herpestes edwardsii* Geoffroy in captivity. 73rd session of Ind. Sci. Congress Association, Delhi.
6. **Jagathpala Shetty**, Gunapala Shetty and S.R.Kanakaraj (1988). Steroid synthesizing cellular sites in the testis and epididymis of gray mongoose, *Herpestes edwardsii edwardsii* Geoffroy. All India Symposium on Reproductive Biology, Mysore.
7. Gunapala Shetty, **Jagathpala Shetty** and S.R.Kanakaraj (1988). Follicular atresia in the ovary of mongoose, *Herpestes edwardsii edwardsii* Geoffroy. All India symposium on Reproductive Biology, Mysore.
8. **J. Shetty**, G.K.Marathe and R.R.Dighe (1994). Pituitary gonadotropins regulate spermatogonial proliferation and prevent apoptotic cell death of the testicular germ cells. 16th International Congress of Biochemistry and Molecular Biology, New Delhi, India.
9. **J. Shetty**, M.Samaddar, S.Gandre, S.C.Sharma, J.F.Caterall and R.R.Dighe (1995). Biological and immunological characterization of recombinant rat FSH receptor fragments. Discussion meeting and Symposium on Recent Trends in Reproductive Biology and Molecular Endocrinology, Bangalore.

10. R. R. Dighe and **Jagathpala Shetty** (1995). Apoptotic cell death of testicular germ cell: a new insight into hormonal regulation of spermatogenesis. 64th Annual meeting of Society of Biological Chemists, Lucknow.
11. Shibahara, H., Naaby-Hansen S., Coonrod, S., **Shetty, J.**, Flickinger, C.J., and Herr, J.C (1997). Identification of GPI- anchored human sperm membrane proteins, Biol. Reprod., Vol 56, supplement 1, p 212a (SSR meeting)
12. Herr, J.C., Naaby-Hansen, S., Diekman, A.B., Wolkowicz, M.J., Westbrook-case, A., Norton, E., Klotz, K., Shibahara, H., Koul D., Mandel, A., **Shetty, J.**, Flickinger, C.J (1997). Discovery and characterization of sperm contraceptive vaccinogens. Vaccines Beyond 2000, CSIRO, Australia .
13. Herr, J.C., Naaby-Hansen S., Wolkowicz M.J., Shibahara H., Kaul D., Mandal A., **Shetty J.**, Flickinger, C.J. (1997). Strategies for the development of a sperm antigen based contraceptive vaccine. European Society for Human Reproduction and Endocrinology meeting, Edinburgh, Scotland.
14. Naaby-Hansen, S., Wolkowicz, M.J., Shibahara, H., **Shetty, J.**, Flickinger C.J., and Herr J.C. (1997). Towards a comprehensive 2-D gel protein database for the human spermatozoan, Biology of Reproduction., vol 56, supplement 1, p 172a (SSR meeting).
15. **Shetty, J.**, Naaby-Hansen S., Shibahara H., Bronson R., Flickinger C.J and Herr J.C (1998). Immunodominant sperm antigens recognized by sera from infertile men and women containing antisperm antibodies. SSR meeting at College Station, Texas.
16. Coonrod, S.A., Naaby-Hansen, S., **Shetty, J.**, Shibahara, H and Herr, J.C (1998). Treatment of zona-free hamster oocytes with PIPLC blocks human sperm- hamster egg interaction and releases a protein cluster (33-43 kDa, PI 4.3-5.5) from the oolemma. SSR meeting at College Station, Texas
17. Hao ZL, Wolkowicz MJ, **Shetty J**, Klotz K, Coonrod SA, Brolling L, Sen B, Westbrook VA, Flickinger CJ, Herr JC (2001). SAMP32, a novel, testis-specific, membrane-associated protein, is localized to the acrosome of human spermatozoa. Biology of Reproduction 64: 194-194 Suppl. 1 2001 (SSR meeting)
18. Mandal A, Klotz K, Wolkowicz MJ, **Shetty J**, Jayes FL, Flickinger CJ, Herr JC (2000). APL17 and APLX: Two novel human acrosomal pseudo-lysozymes Molecular Biology of the Cell 11: 2694 Suppl. S.
19. Mandal A, Naaby-Hansen S, Wolkowicz MJ, Sen B, Retief J, Westbrook VA, **Shetty J**, Cox M, Jayes F, Coonrod SA, Klotz KL, Bush LA, Flickinger CJ, Herr JC (2000). CBP86, a novel testis-specific Ca²⁺-binding protein localized in the human sperm tail is regulated by phosphorylation during in vitro capacitation. Molecular Biology of the Cell 11: 2696 Suppl. S.
20. **Shetty J**, Diekman AB, Jayes F, Sherman N, Hansen SN, Herr JC (2000). Differential extraction and enrichment of human sperm surface proteins in a 2-d proteome: Identification of immunocontraceptive candidates. Biology of Reproduction 62: 119 Suppl. 1, SSR meeting at Madison, Wisconsin.
21. Hao ZL, Wolkowicz MJ, **Shetty J**, Flickinger CJ, Herr JC (2000). Cloning and characterization of putative human sperm membrane antigen related to circumsporozoite (SMARC32). Biology of Reproduction 62: 122 Suppl. 1, SSR meeting at Madison, Wisconsin.

22. Mandal A, Naaby-Hansen S, Wolkowicz MJ, Koltz K, **Shetty J**, Retief JD, Conrod SA, Kinter M, Sherman N, Cesar F, Flickinger CJ, Herr JC (1999). FSP95, a testis-specific 95-kilodalton fibrous sheath antigen that undergoes tyrosine phosphorylation in capacitated human spermatozoa. *Biology of Reproduction* 61 (5): 1184-1197 (SSR meeting)
23. Coonrod S, Kinter M, Sherman N, Naaby-Hansen S, **Shetty J**, Herr J (1999). Identification of mouse egg surface proteins by tandem mass spectrometry. *Biology of Reproduction*. 60:368 Suppl. 1.
24. Shibahara H, Wakimoto E, Naaby-Hansen S, **Shetty J**, Herr JC, Koyama K (1999). Identification of immunodominant human sperm antigens recognized by sera from infertile women with sperm-immobilizing antibodies. *Biology of Reproduction*. 60: 527 Suppl. 1 (SSR meeting).
25. Mandal A, Nabby-Hansen S, Klotz K, Wolkowicz MJ, **Shetty J**, Cesar F, Flickinger CJ, Herr JC (1998). Two novel human sperm fibrous sheath proteins which undergo phosphorylation during capacitation. *Molecular Biology of The Cell* 9:381 Suppl. S
26. Herr JC, Naaby-Hansen S, Wolkowicz MJ, Mandal A, **Shetty J**, Flickinger CJ (1998). A strategy for identification and cloning of novel sperm surface immunogens. *Faseb Journal* 12 (5): 5276 Part 2 Suppl. S
27. **J. Shetty**, MJ Wolkowicz, A Diekman, FL Jayes, CJ Flickinger, JC Herr (2000). Cloning and characterization of C58, a novel, hydrophobic, putative human sperm membrane antigen related to the Ly-6 family of proteins. Second International Conference on Experimental and Clinical Reproductive Immunology, 15-18 November, 2000, Amsterdam, The Netherlands.
28. MJ Wolkowicz, **J Shetty**, F Jayes, CJ Flickinger, JC Herr (2000). An autoantigenic osteoglycin-like protein discovered by 2-D proteomics. Second International Conference on Experimental and Clinical Reproductive Immunology, 15-18 November, 2000, Amsterdam, The Netherlands.
29. Mandal A, Klotz KL, **Shetty J**, Jayes FL, Wolkowicz MJ, Bolling LC, Coonrod SA, Black MB, Diekman AB, Haystead TAJ, Flickinger CJ, Herr JC (2002). SLLP1, a novel non-bacteriolytic c lysozyme-like protein in the acrosome of human spermatozoa. *Biology of Reproduction*. 66:40 Suppl. 1, SSR meeting.
30. **Jagathpala Shetty**, Michael J. Wolkowicz, Kenneth L. Klotz and John C. Herr (Oct. 2003). Meichroacidin, a Novel Morn Repeat Family Member Localizes within the Axoneme of Human Sperm and Is a Human Alloantigen. selected for oral presentation at 59th Annual meeting of American Society for Reproductive Medicine (ASRM) to be held Oct 11-15, 2003, in San Antonio, Texas.
31. Mandal A, Klotz KL, **Shetty J**, Vemuganti SA, Coppola MA, Haystead TAJ, Flickinger CJ, Herr JC (2004). SLLP2, a novel non-bacteriolytic lysozyme-like protein of human spermatozoa linked to the X chromosome *Biology of Reproduction* 143 Sp Iss, 125-125. SSR meeting.
32. Vanage GR, **Shetty J**, Klotz KL, Westbrook VA, Flickinger CJ, Herr JC (2004). Localization of SAMP14, a novel acrosomal membrane associated protein, during acrosome biogenesis in the human testis. *Biology of Reproduction* 304 Sp. Iss: 162-163. SSR meeting.
33. Herr JC, Wolkowicz MJ, **Shetty J**, Bolling LC, Kurth BE, Flickinger CJ (2004). Mining the sperm proteome for uncharted regions of the human genome *Faseb Journal* 18 (5): A1122-A1122 Suppl. S,

34. **Jagathpala Shetty**, Michael J. Wolkowicz, Laura C. Digilio, Kenneth L Klotz, V. Anne Westbrook, Geeta Vanage, Charles J. Flickinger and John C. Herr (2004). **Sperm Proteomics: Mining Novel Alloantigens of the acrosome and flagella**. ASRI, 24th Annual meeting, St. Louis, Missouri.

Patents:

Patents Issued:

1. U.S. Patent No. 6,924,121 B2 issued on August 2005, titled: Sperm specific proteins.

Provisional Patents

1. John C. Herr, Charles J. Flickinger, **Jagathpala Shetty**, Soren Naaby-Hansen. International Patent application No. PCT/US00/07686 entitled "Human sperm surface antigen", filed on March 22, 2000, claiming priority to U.S. Provisional Patent application serial No. 60/125,504 filed March 23, 1999 entitled "Human sperm proteome; immunodominant sperm surface antigens identified with sera from infertile men and women".
2. John C. Herr, Friederike Jayes, Arabinda Mandal, **Jagathpala Shetty**. International Application No. PCT/US01/01716, filed January 19, 2000 entitled "Sperm specific Lysozyme-like proteins".
3. John C. Herr, **Jagathpala Shetty**, and Michael J. Wolkowicz. U.S. Provisional Patent Application Serial No. 60/412, 202, filed September 20, 2002 entitled "C66, Sperm specific proteins".
4. John C. Herr, **Jagathpala Shetty**, Teresa Thomkins, Michael J. Wolkowicz. U.S. Provisional Patent application No. 60/412, 318, filed on September 20, 2002, entitled "C114, Sperm specific Proteins".

Membership to Scientific Organizations:

1. Bombay Natural History Society, Mumbai, 1988-1990
2. Society for Biological Chemistry, India, 1994-1996
3. 'Genesis' an interactive scientific community at Indian Institute of Science, Bangalore, India, 1992-1996.
4. Society for Study of Reproduction, USA, 2000- till present
5. Associate Member, American Society for Reproductive Immunology, USA, since 2004
6. The Proteome Society, USA. 2003

Evaluation of Scientific work:

1. Participated as a referee and reviewed a manuscript entitled "Fine resolution of human sperm nucleoproteins by two-dimensional electrophoresis" submitted to the journal **Molecular Human Reproduction**, Feb. 2005.
2. Participated as a referee and peer reviewed an article entitled: 'Molecular contraceptive approaches targeting sperm: current status' submitted to **Expert Reviews in Molecular Medicine**, Feb 2005.

3. Participated in the critical evaluation of an article entitled “Purification and characterization of plasma membrane-associated human sperm α -L-fucosidase” submitted for publication in the journal, **Biology of Reproduction** in 2002.

References:

1. Prof. John C. Herr,
Dept of Cell Biology,
University of Virginia, VA-22908
USA
2. Prof. Charles J. Flickinger,
Department of Cell Biology,
University of Virginia, VA-22908.
USA.
3. Prof. Rajan R. Dighe,
Indian Institute of Science,
Bangalore- 560 012, India.